3-2

Food Security, Nutrition, and Health in Costa Rica's Indigenous Populations

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Executive Summary

Indigenous groups all over the world have been economically, politically, and socially marginalized and have worse health and nutrition outcomes and more food insecurity than mainstream populations. Costa Rica has been held up as an exemplar country for good development. Per capita gross national income and literacy in Costa Rica is the highest out of all Latin American countries; infant and under-five mortality rates, low birth weight, moderate and severe under-five malnutrition, and maternal mortality rates are the lowest. The indigenous people of Costa Rica, however—eight groups that represent 1.7 percent of the population—have not shared in the benefits of Costa Rica's development. They have higher infant, child, and general mortality rates and higher rates of malnutrition and infectious disease than the general population. Indigenous reservations constitute much of the 3 percent of the country that lacks potable water, and about 40 percent of the indigenous have access to sewage disposal, compared with 92 percent of the general population. Contributing to these problems are the geographic isolation and poor land of many indigenous reservations, lack of infrastructure, spread-out villages, and pollution from banana plantations that are close to some reservations.

To date, agricultural and health interventions lack consideration for traditional indigenous food, farming, and medicine systems. This approach undermines indigenous culture while at the same time failing to provide sufficient opportunities for good health and nutrition: markets and health clinics are scarce in indigenous reservations.

Policy options for increased food security and nutrition include encouraging the use of native and wild food crops, improving the productivity of indigenous crops, breeding mainstream crops to suit the soil and climate conditions of the reservations, increasing market opportunities, aiming interventions at women, restoring land productivity in the reservations, moving the reservations to better land, encouraging "agrotourism," or encouraging a shift in livelihood away from farming. Policy options for improved water supply include building infrastructure for purified water in the reservations and educating indigenous communities about sanitation. For improving overall health, policy options include building more clinics in indigenous reservations, dispatching mobile clinics, encouraging the use of traditional medicine, promoting biomedical education among indigenous youth, using community radio to disseminate health messages, and increasing political commitment to eradicate health disparities. Gender issues are important to consider because many indigenous women are the primary farmers and food providers, particularly if their husbands migrate to find work. All policy options must include indigenous people in active participatory or leadership roles to guide these interventions in the most appropriate and needed direction.

Your assignment is to recommend to the government of Costa Rica a set of policy measures to improve the food security, nutrition, and health of the indigenous populations in Costa Rica.

Background

Indigenous groups around the world are often unfavorably affected as the countries they live in develop to keep pace with a globalizing world. The story of the marginalization of indigenous peoples, inevitably followed by poor health outcomes among those people, has played out countless times and in countless places around the world. Even well-intentioned development initiatives often fail to connect with indigenous peoples. While indigenous groups are often in similar locations and belong to a similar socioeconomic class as the rural poor in general, their situation deserves special attention. Unlike the rural poor in general, indigenous groups often have different language and cultural norms from those of the mainstream society. They also have considerable history in and knowledge about the ecosystems in which they live and grow food and medicine. To the extent that indigenous groups retain traditional subsistence livelihoods, this ecosystem knowledge is an important part of the spiritual and cultural traditions that sustain group identity. Often small, distinct groups, indigenous peoples frequently lack a political voice because of discrimination and language barriers.

Confronted with land use changes and globalization, indigenous livelihoods, land, and values often

undergo a process of profound change and questioning. Now, as many indigenous groups struggle with the tension between tradition and acculturation, wide disparities in food security, nutrition, and health can be seen between indigenous and majority groups. As a matter of human rights and public health, societies must address food security and nutrition, which in turn predict a broad range of health outcomes, among indigenous peoples.

Indigenous Groups around the World

Indigenous groups historically have been marginalized socially, politically, and economically throughout the world. Among the effects of this sidelining are poor health outcomes. Although these problems are commonly known, actual data on indigenous health are strikingly difficult to find, and there are no apparent coordinated efforts for regular data collection on indigenous groups across regions. One reason for this dearth could be that indigenous regions are often remote and difficult to survey—in some regions, achieving access to a good random sample of indigenous people could require days of walking through mountains where there are no roads, a feat that requires not only time, but also physical fitness, endurance, and a considerable extension of the typical data collector's comfort zone. Other reasons for the lack of data could be political: in many countries indigenous people represent 1 percent or less of the population, and their political presence could be even smaller than that figure suggests, because they may be illiterate, speak only indigenous languages, and be unengaged in voting or politics. Notwithstanding the paucity of data, the information available suggests that the situation and progress of indigenous groups in Australia, China, Brazil, and Bolivia illustrate some of the key issues surrounding indigenous health.

The aborigines of Australia have undergone a long struggle against discrimination and marginalization, and their issues are increasingly becoming recognized. They illustrate the classic story of colonization: the aborigines, who had subsisted in Australia for thousands of years, were pushed off their land and exterminated in great numbers with the arrival of European settlers in the late 18th century. The aborigines constitute 2.4 percent of the Australian population and have the worst overall health indicators of any subpopulation (Australian Indigenous Health*/infoNet* 2006). The incidence of low birth weight is twice as high, infant mortality is two to three times higher, and life expectancy is 17 years less in the aborigine population than in the general population. The disease responsible for the highest proportion of indigenous deaths is cardiovascular disease; aborigine males are 25 percent more likely to die from diabetes than the general population, and females are 43 percent more likely (Australian Indigenous Health*/infoNet* 2006). Australian aborigines are over 30 percent more likely to injure themselves and 11 percent more likely to be injured by assault. They have rates of tuberculosis 10 times higher than the general population; respiratory disease overall is 14–18 times higher for indigenous people (Australian Indigenous Health*/infoNet* 2006). In Australia, the indigenous seem to have poorer health outcomes of all kinds: communicable disease, noncommunicable disease, and violence. Unlike many countries, Australia collects comprehensive data by ethnic group. Because data on indigenous health are lacking elsewhere, it is possible to surmise that similar magnitudes of disparities may exist in many other countries.

China does not publish health data by ethnic group. The 55 minority groups of China make up 8 percent of the population. The Chinese government states that it strives for equality, and even gives preferential treatment to ethnic minorities, by making it easier for them to get into colleges and waiving the one-child policy for minorities (Park and Han 1990). The plight of the Tibetans, however, has revealed the oppression of minorities in China. China invaded and annexed Tibet in 1949–1951, causing the government of Tibet to live in exile in India, and continues to repress religious and cultural activity of the Tibetans. Stories of human rights violations and violent police action circulate regularly. Tibetans and other minority groups live primarily in rural areas, outside the large southeast area where the majority of Chinese live, and have faced discrimination, reported human rights violations, and less access to agricultural innovations, markets, and health care than their urban, Han Chinese counterparts. A study on the economic situation of ethnic minority villages found that most such villages are consistently worse off than average, although some minority villages in the northeast are better off than average (Gustaffson and Sai 2006). It seems that although China's economy has vaulted into the 21st century, the benefits of globalization and the huge increases in capital and living standards have been limited to

the majority group, particularly those living in cities.

Although the indigenous in Brazil represent only about 0.2 percent of the population, there are more than 200 indigenous groups that live in 24 of the 26 states in Brazil. The majority (60 percent) live in the North and Center-West regions. In these areas, there are high rates of infectious disease: malaria, tuberculosis, diarrheal disease, respiratory disease, and vaccine-preventable disease (PAHO 2002a).

Land struggles have been the dominant headline concerning the indigenous of Brazil. Many of Brazil's indigenous subsist in rainforest areas, hunting and gathering food and collecting medicines. Non-enforcement of indigenous boundaries has had ugly consequences. For example, because of judiciary decisions that have whittled away the Guarani-Kaiowa reservations as ranchers claim the land as their own, more than 300 indigenous people have committed suicide in the past decade. The Guarani-Kaiowa say they cannot survive on such small territories, when their traditional livelihoods depend on large stretches of land for subsistence (Borges and Combrisson 2006). The Yanomami and many other groups have struggled with gold miners who invade and destroy their rainforest territories.

Some steps are being taken to improve the situation of Brazil's indigenous people. Beginning in 1999, the government established 34 indigenous health districts as a part of the National Health Foundation, under which indigenous health workers are trained in basic health care provision. Referrals can be made to "Indian health units" in city health centers (PAHO 2002b). In 2007, FUNAI (Brazil's National Foundation for Indigenous Peoples) held a conference that ratified the creation of a National Indigenous Policy Commission, an indigenous "parliament" that can discuss policy decisions with the Brazilian legislature (FUNAI 2007). The conference failed, however, to establish laws restricting mining on indigenous lands (Osava 2006)—this struggle over land rights continues.

More than 60 percent of Bolivians are indigenous, yet recently, for the first time, they gained commensurate political representation. In 2005 Bolivians elected President Evo Morales, the first indigenous president in the history of the country. One might wonder why it took so long for an indigenous president to be elected, with such a large indigenous population. One of the problems was that many indigenous people, including Morales's own mother, did not have identification cards or birth certificates, which excluded them from the political process. His father received identification only when he was drafted into the Bolivian army. This is one of the problems that Morales is attempting to solve (Democracy Now 2006).

There are huge health disparities between the indigenous and non-indigenous populations of Bolivia. In some indigenous areas, the infant mortality rate is up to 200 per 1,000 live births (PAHO 2006), whereas the national infant mortality rate is 54 (PAHO 2005b). Only 4.5 percent of Bolivians are illiterate, but 20 percent of Bolivia's indigenous are illiterate (PAHO 2006). For President Morales, land rights, public health, and education for the indigenous of Bolivia are priorities toward which money has been redirected since his election (Democracy Now 2006).

Costa Rica in Context

Costa Rica is the richest country in Central America and has the best health indicators. Per capita gross national income is higher in Costa Rica than in all other Latin American countries, and only 2 percent of Costa Ricans are living below the international poverty line (here, considered less than US$1 a day), whereas 45 percent of Nicaraguans, 31 percent of Salvadorans, 21 percent of Hondurans, 16 percent of Guatemalans, and 10 percent of Mexicans live below the poverty line (PAHO 2005b). Literacy is the highest in Costa Rica out of all Latin American countries; infant and under-five mortality rates, low birth weight, moderate and severe under-five malnutrition, and maternal mortality rates are also lowest (PAHO 2005b). Fully 97 percent of Costa Ricans have access to potable water, and 92 percent have access to sewage systems. The mortality rate from communicable diseases is much lower than in other Central American countries and even lower than in the United States by half. Mortality from circulatory diseases and diabetes in Costa Rica is mid-range compared with other countries in Latin America, but much lower than in the United States (PAHO 2005b). Life expectancy is 81 years for females and 76 years for males (PAHO 2005a).

Part of the increases in wealth and economic development have been possible because Costa Rica has no military, a fact that saves the government billions of *colones* each year. Costa Rica spends about 5 percent of its gross domestic product (GDP) on public health, a figure that usually correlates to good health in a nation. In comparison, El Salvador, Guatemala, and Honduras each spend 2 percent or less, and the United States spends 6.3 percent (PAHO 2005b). The Costa Rican government provides health services free of charge to all. It has been held up as an exemplar country for good development. Given all that is going well in Costa Rica, why are the indigenous who live there so far behind?

Indigenous in Costa Rica

According to the 2000 Costa Rica census, indigenous peoples make up 1.7 percent of the population in Costa Rica and number about 64,000 (INEC 2000). There are eight recognized indigenous groups: Huetar, Chorotega, Teribe, Brunka, Guaymí, Bribri, Cabecar, and Maleku. They live in 24 reserves, which were delineated starting in 1956 and set into law in 1977. The government established these territories where indigenous people already inhabited the land and claimed that these areas were rich in forests, rivers, and animals, with good potential for agriculture, hunting, fishing, and gathering plants for various uses, as well as clean water in rivers and streams (Chacón 2002). Most of the indigenous territories, particularly in the southeast part of the country, are in mountainous regions. Now, 73 percent of indigenous people live on these reserves (U.S. Department of State 2005). Documentation of the cropping systems and specific diets in these regions is virtually nonexistent in the literature; issues in this case study are culled from the information available as well as personal observation of the indigenous reserves in Talamanca (a mountainous region near the border of Panama) in 2006.

The territories have been reduced in size four times by decree since 1977 (Schulting 2007). Although non-indigenous people may be removed from reservations by law, it is estimated that up to 80 percent of inhabitants of indigenous reserves are actually non-indigenous and that indigenous people may sell their land illegally (Schulting 2007; U.S. Department of State 2005).

Land use not only within, but also proximate to, indigenous reservations affects livelihoods. In 1886 an agricultural colony was established in the region of Talamanca, near the Cabecar and Bribri reservations of today (regions 10 and 11 on the map).[1] This colony profoundly changed those indigenous communities. The great majority of the indigenous land was settled by non-indigenous agriculturalists. Along with these settlers came the banana plantations: United Fruit (now Chiquita®), and later Dole® and others. Many indigenous in this area began working for the multinational companies that settled their land, and in so doing, completely altered their way life. Instead of growing their own food, they switched to a primarily cash-based economy, which changed their diets and their use of native crops.

In the more remote indigenous communities in the mountains, some people left their homes for days or weeks at a time to work in the lowlands. This practice defined gender roles, as men left their villages to work in the nearby banana plantations and women remained at home, responsible for growing or collecting medicinal and food plants.

The water in the Talamanca reservations near the *bananeras* is nonpotable. In the lowlands, the water supply is entirely polluted with pesticides and other agrochemicals that are sprayed on the huge expanses of banana plantations every few days; this water supply is the workers' only source of drinking water. In the mountains the water is not polluted, but there is no infrastructure for public water provision.

There has been little attention to indigenous issues in the government. Indigenous people are poorly represented in national politics. In Costa Rica indigenous were given the right to vote only in 1994 , and there are no indigenous in the Legislative Assembly (U.S. Department of State 2005). A National Commission of Indigenous Affairs (Comisión Nacional de Asuntos Indígenas, or CONAI) was created in Costa Rica in 1973; however, this organization generally lacks power and receives too little funding to enforce laws protecting indigenous people (Schulting 2007). Getting

[1] These are the largest indigenous groups: 34 percent of Costa Rica's indigenous are Bribri and 26 percent are Cabecar.

indigenous issues to be considered seriously is a struggle in many places, and in Costa Rica indigenous groups are particularly vulnerable because many people do not even know they exist. Unlike the Tibetans, they do not attract large-scale political efforts and public attention, and unlike the indigenous in Bolivia, they do not have potential strength in numbers.

Because of their land rights issues, struggle for political voice, and challenges to traditional livelihoods that affect health, the indigenous groups living in Costa Rica make an apt case study of the experience of indigenous minority groups living in a rapidly modernizing nation among a majority in power. Indigenous groups in Costa Rica have the poorest health indicators in the country. Indigenous areas have higher birth rates, as well as higher infant, child, and general mortality rates. In a 1999 study of the Turrialba canton, the indigenous made up 4 percent of the population but bore the burden of 29 percent of infant deaths (PAHO 2002b). The same study found that only 27 percent of indigenous pregnant women had prenatal care, compared with 82 percent for Costa Rica as a whole.

Indigenous reservations constitute much of the 3 percent of the country that lacks potable water. Although 92 percent of the general population has access to sewage disposal, only about 40 percent of the indigenous have latrines (PAHO 2002b). Malnutrition and infectious disease are the largest health problems in indigenous groups.

Many indigenous reservations are in mountains where government health care and agricultural services do not reach. Yet Costa Rica's indigenous have been heavily influenced by mainstream *tico* (Costa Rican) culture and in recent decades have rejected many of their native food crops and traditional medicines. Policies to address food insecurity in Costa Rica fail to validate the utility of native crops, and concurrently the agroeconomic system (a cash crop market economy) fails to provide adequate opportunities for improved nutrition. Many indigenous Costa Ricans have become farm workers for multinational agribusinesses, particularly in banana plantations, where they work long hours for low pay and benefits.

The fundamental problem of Costa Rica's indigenous is that they are caught between old and new, traditional and modern, unable to benefit from either. Given their small numbers and frequent contact with mainstream *tico* culture, many indigenous now reject their traditional culture and desire to blend in with the mainstream. This attitude is more disadvantageous for indigenous groups than for the rural poor in general because the transition to modernization involves a loss of culture, identity, and self-esteem owing to the stigma of being different and "backward." Indigenous people face prejudice and barriers to integrating into the mainstream culture; they often have the lowest-paying, lowest-status jobs (for instance, on banana plantations) when they integrate into the mainstream. They lack opportunities because they do not have a formal education or speak the dominant language fluently. They confront subtle or overt discrimination in health services, employment, income, housing, education, and daily life, and they are dispossessed of their land while their reservations are placed on marginal land that does not support agriculture or health services well.

Policy Issues

The need to improve the health of indigenous Costa Ricans is clear. This section describes some issues that have prevented this improvement.

Inappropriate Agricultural Interventions

Although tourism and export agriculture production are the top contributors to GDP in Costa Rica (CIA 2006), the main livelihood of the indigenous is semi-subsistence agriculture (subsistence production coupled with some income-generating activities and food purchases). Agricultural interventions have historically focused almost exclusively on traditional Latin American crops and practices (coffee, banana, sugar, rice, beans, and corn). The typical high-yielding varieties of these crops require more intensive production than native crops and do not necessarily yield well in the regions where indigenous live. Not only are the rainfall, soil types, and overall climate in indigenous reservations quite different from the lowlands where the main cash crops are usually grown, but also high-yielding varieties usually require intensive inputs that are not accessible to the indigenous. Points of sale of improved seed, fertilizers, and pesticides are often far away, and purchasing those items is beyond the means of the poorest farmers.

Furthermore, there are legal barriers to credit in the reservations, as a center for Indian rights explains: "Indigenous peoples in Costa Rica cannot obtain agricultural credit because the lands belong to the community and there is no legal formula for providing guarantees on communal properties" (Schulting 2007).

The assumption that by focusing on mainstream cash crops the indigenous will be able to earn enough income to buy more than they would have produced in home production is fundamentally flawed. Markets in which indigenous can participate are scarce. Given the remote locations of many reservations, connecting to larger markets is a challenge. Lack of Spanish language ability and competition with large agribusinesses producing the same cash crops, not to mention the price volatility of commodities such as coffee and sugar cane, make the intended high earnings unattainable. Given the impossibility of a complete, rapid transition from subsistence farming to a cash-based economy, monocropping fails to meet the nutritional needs of the growers: the crops themselves do not provide a diverse diet, and the income they earn is not enough to purchase a variety of nutritious foods.

The Ministry of Agriculture agency in Limón, a canton in southern Costa Rica with a substantial indigenous population, has only one bullet point in its strategic plan for the indigenous: to provide rural development programs for the indigenous (Ministerio de Agricultura y Ganaderia 2006b). The Ministry of Agriculture agency in Buenos Aires, a neighboring canton in southern Costa Rica with a high indigenous population, has outlined more concrete strategies to improve food security for the indigenous. The plan cites an absence of agricultural projects as a cause of poverty, migration, and food insecurity. The agency proposes projects that include goat and cow production, vegetable gardens for home use, and irrigation systems for dry seasons.

The proposed interventions acknowledge the indigenous people's poor lands and limited access to national and international markets, and they focus on interventions for home production. The home production suggested, however, proposes to adapt indigenous land so that mainstream crops can be productive—that is, so that crops with high water needs can grow and animals will have ample pasture to graze. The projects for milk and meat production will be only partially successful, however, since the indigenous are generally lactose intolerant; these projects will not meet needs for home consumption but may be used for income generation if markets are accessible. The Ministry of Agriculture also proposes projects to increase use of organic fertilizer but does not specify the crops on which the fertilizer will be used or whether the organic fertilizer will guarantee expected yields (Ministerio de Agricultura y Ganaderia 2006a).

These projects represent a missed opportunity to take advantage of native crops. The World Bank Participation *Sourcebook* illustrates where this has happened elsewhere:

> When programs benefit from farmers' traditional knowledge as well as modern research, the risk of serious mistakes is greatly reduced. Examples of what can happen when the value of local knowledge is not appreciated include the aggressive promotion of maize by extensionists in Ethiopia to replace the indigenous grain teff despite skepticism and resistance from local farmers. Many Ethiopians suffered unnecessarily when maize proved less drought resistant and the crop failed; subsequent data also showed that teff provided superior food value. In Bali, after efforts in the 1970s to introduce the Green Revolution to rice cultivation had led to catastrophic pest damage, researchers learned that traditional local husbandry techniques were more efficient (Antholt and Zijp 1996, 2).

Frison et al. (2006, 4) note that the underuse of indigenous food systems is "not surprising considering the lack of knowledge among programme planners and implementers of the nutritional and functional properties of indigenous and traditional foods that are often more familiar and accessible to the targeted malnourished populations." Leaders of the Food and Agriculture of the United Nations (FAO) acknowledge the contributions of wild fruits, greens, and insects to nutritional adequacy (Tontisirin et al. 2002). These contributions have also been shown in other places around the world:

- Grivetti and Ogle (2000) reviewed the available literature and found that wild edible plants contributed high amounts of micronutrients to indigenous people's diets in several Sub-Saharan countries (Burkina Faso, The Gambia, Mali, Niger, Swaziland, and Tanzania).
- *Moringa oleifera*, a Sub-Saharan African multiuse tree whose leaves are used to make stew, has very high levels of vitamins A and C, calcium, iron, and protein (Gidamis et al. 2004).
- Wild-gathered fungi in Europe are an important dietary component during food shortages (de Roman et al. 2006).
- Salvatore et al. (2005) suggest that Sicilian wild greens should be incorporated into modern diets as well as traditional ones, owing to their high nutrient and antioxidant content and their protective role against chronic disease.
- When yields of main agricultural crops such as rice were low, rural communities of northern Thailand depended more on wild foods than on purchased food. Wild-collected foods were a substantial part of their diet and nutrition, including fish, crabs, snails, shrimp, birds, red ant eggs, certain frogs and toads, rabbits, white paddy rats, insects, bamboo shoots, and many other kinds of plants (Somnasang et al. 1998). Another community-based study in Thailand found that collection of shrimp and wild greens accounted for the difference between well-nourished and malnourished children in poor families (Sternin and Sternin 2004; Marsh et al. 2002).

Although the use of wild plants by Costa Rica's indigenous has not received much attention, several wild-gathered foods in Costa Rica are known to have high nutritional value. *Pejibaye* is a bright orange, beta-carotene-rich fruit that is wild-collected from a certain species of palm and has gained popularity throughout Costa Rica. The indigenous collect other plants, such as fiddleheads (young ferns) and many leafy shoots. The Bribri have been documented to cultivate more than 120 domesticated and wild crops per hectare of land, many of which are used for food and medicine (Whatley 2006). Nutritionists, agronomists, and health professionals largely ignore the possible contributions of native and wild foods to health, but there is no question that they can add significantly to the nutritional adequacy of a diet. Eating native and wild foods that grow easily and are widely available makes sense. It is the job of health promoters and agricultural extensionists to work with local farmers to learn what foods are locally available and acceptable and not to underestimate their nutritional value offhand.

Perhaps more detrimental than the opportunity cost of inappropriate agricultural interventions is that the focus on nonnative crops encourages indigenous people to consider native crops "poor food" to be used only in desperation, not an asset to be utilized. Cruz Garcia (2006) reports that although consumption of wild foods contributes substantially to indigenous diets in Wayanad, India, their use is a "symbol of poverty" and is stigmatized as "backward," which leads to a lack of interest in learning about and eating these wild foods among young people. The phenomenon of nonnative foods displacing local foods has been called "gustatory subversion," which leads to economic and cultural dependency (Lewis 1998). London et al. (2006) link changes in agriculture, particularly in poor populations, to increases in mental illness and negative psychiatric outcomes. We are what we eat, in both a physical and a psychological sense. Food is not only calories and nutrients; it is also culture.

Implication: Agricultural interventions have not accomplished their goals of reducing food insecurity because they have not sufficiently taken local resources, knowledge, and participation into account. Interventions need to be planned with the indigenous community in order to succeed in reducing food insecurity.

Consideration of Women in Agricultural Projects

In addition to making sure that agricultural interventions target appropriate crops, they must also target all appropriate members of the household. Women are often the primary farmers and may be more in touch with native crop and medicine use, out of necessity and because they are more integrated into the community. Agricultural

extensionists are mostly men, and the culture of agriculture extension often excludes women from participating and assumes they are only helpers, not leaders, in agricultural production (WOCAN 2006). The *World Bank Participation Sourcebook* states that "the importance of the role played by women in agricultural production is such that the widespread failure so far to reach women farmers through formal extension services has major repercussions for national output and food security as well as social justice" (Antholt and Zijp 1996, 2). This failure is particularly true for indigenous communities. In reserves close to substantial employment opportunities, such as banana plantations, targeting women is doubly important, since men often leave to work while the women remain in charge of locally harvested food and feed their children with what is most available and acceptable.

Implication: Agricultural projects should include high levels of participation by women.

Poor Integration of Medical Services

Issues surrounding food production systems are one part of the problem behind poor health outcomes for indigenous people; health care issues are another. Like traditional food systems, the traditional medicine systems used by indigenous people usually do not align with mainstream culture. This difference distinguishes indigenous groups from the rural poor in general and makes the policy issues more nuanced.

Indigenous cropping systems contribute to the production of medicinal plants. Like wild-collected foods, whose nutritional benefits are often dismissed, the use of medicinal plants is often written off as quack medicine or even condemned as paganism. This attitude again misses an opportunity to take advantage of locally available assets. Limited health care access is a problem in indigenous communities, and medicinal plants have an important function in health and healing. The field of bioprospecting is founded on the basis that a high percentage of plants used traditionally for medicinal purposes turn out to have potent biochemical activity when tested in the laboratory. It is estimated that 25 percent of modern Western medicine originates from plants (Tyler 1996). Like wild and native crops, medicinal plants have important cultural as well as biological functions.

In 1998 CONAI and the Costa Rican social security system signed an agreement to work toward integrated health services for the indigenous—a first step toward recognizing the value of traditional medicine (PAHO 2006). In a pilot project toward this goal, a Cabecar practitioner of traditional medicine was hired to practice in the government clinic alongside public health workers. Patients then had a choice of which kind of doctor to visit when they came to the clinic. Although the intention was to increase cultural competency by offering both kinds of medicine to indigenous patients, in the end the project denigrated, rather than validated, the worth of traditional medicine. Putting the two kinds of medicine side by side spurred a sort of competition between the techniques in areas such as who got more visits and who cured patients faster. Another issue was the patients' fear of being stigmatized for visiting the traditional healer. In the end, the traditional medicine did not get very much business and was pushed out of the clinic.

The problem here was that the intervention "integrated" traditional and modern medicine simply by transplanting a traditional medicine practitioner into a modern clinic. This approach is antithetical to most traditional medicine, which uses spirituality and connection with nature as much as the chemical properties of the plants themselves. Furthermore, many practitioners of traditional medicine accept payment in kind, like food, labor, or clothes, and getting paid a salary for healing was inconsistent with the community- and spiritually oriented nature of traditional medicine. Like misguided agricultural interventions, this development project suffered from a lack of indigenous community involvement in its planning, and the project did not end up improving health outcomes as hoped.

Implication: Particularly in the absence of access to modern clinics, traditional medicine must be recognized as a whole system, and the indigenous should be encouraged to practice it in their own way. Health care development should involve indigenous peoples in deciding what is needed.

Policymakers' Lack of Knowledge about Indigenous Culture

Policymakers and those who carry out interventions usually lack knowledge about indigenous culture, values, and native crops and medicine. The indigenous themselves are typically not included as

program planners, and among program planners and policymakers, indigenous health is not typically a priority. Efforts toward cultural competency have been inadequate so far. For example, the Pan American Health Organization (which has considered indigenous health a priority in recent years) published a booklet about hygiene for the Cabecar indigenous group in their language, but the cultural competency went only as far as the words on the page. The pictures were of white children brushing their teeth in tile bathrooms—a situation completely removed from the living situation of the Cabecar in the mountains, who live under thatched or tin roofs and without plumbing.

Some of this lack of knowledge can be explained by the scanty information available on indigenous crops, diets, medicines, and culture. To date, there is very little in the formal literature about Costa Rica's indigenous groups. This information gap again points to the need to work with indigenous groups in planning interventions.

Implication: Interventions need to be tailored to indigenous resources and culture if they are to be effective; to do this, indigenous communities themselves or nonprofit organizations that work with them must be involved in planning interventions.

Difficult Access to Diverse Indigenous Groups

Working with indigenous communities and institutions to plan appropriate development projects is admittedly difficult. Indigenous groups are diverse and spread out. There are at least eight different groups or tribes in 24 reservations, posing a challenge for unified health and nutrition interventions. Eight non-Spanish languages are spoken, and many indigenous do not speak fluent Spanish. Some reservations are very difficult to reach because they are located in mountainous regions; access roads can become impassable after heavy rain. All of these factors make centralized planning difficult for planners in the capital, who are not familiar with any of the indigenous cultures or languages.

Implication: Different interventions may be needed for different areas, with active participation of local indigenous people in choosing appropriate interventions.

The Water Challenge

Nonpotable water is the largest challenge to health and nutrition. Many indigenous people live in mountainous, remote areas where infrastructure to deliver purified water does not reach. Other indigenous communities coincide with expansive banana plantations around which the water is polluted with pesticides. Getting pure water to communities in either of these scenarios is an enormous challenge.

Implication: Strategies will need to overcome major practical and political challenges to water improvement.

Stakeholders

Who is affected by policy decisions about indigenous health?

Indigenous Peoples and Institutions

The indigenous are the primary stakeholders in processes that would improve their food security, nutrition, and health. The eight different indigenous groups could benefit or lose in various ways. Policies can cause them to lose autonomy, identity, or established patterns of growing food or eating. Through policy change, they stand to gain increased food, income, agricultural and health services, clean water, a better sense of identity, and access to markets and jobs. Women and children may be most affected by new kinds of agricultural policies and interventions. Indigenous community institutions can represent the views of the community.

Policymakers

Costa Rican legislators and officials in the Ministries of Health and Agriculture will decide on national and regional policies that affect indigenous health and welfare. By implementing policies to improve food security, health, and nutrition in the indigenous, they could gain loyal voters, a healthier workforce, and goodwill from having followed through with promises to respect and improve the situation for the indigenous. New policies, however, come with a cost: the infrastructure and staffing necessary to provide even basic interventions are expensive, given the remoteness of indigenous reserves and the poor access to spread-out communities even within the same reservation. To

implement more innovative and participatory solutions, the Ministries of Health and Agriculture would need to train extension staff and possibly hire new personnel with different ways of working.

CONAI

Costa Rica's National Commission of Indigenous Affairs will be involved in discussions about whether or how to improve indigenous food security, health, and nutrition. The government could strengthen the agency's power with additional funds or staff in order to address indigenous health.

NGOs That Initiate Interventions

There are several nongovernmental organizations (NGOs) within Costa Rica and internationally that have a stake in projects to improve the health of indigenous peoples. Some NGOs have a mission to improve conditions for indigenous peoples,[2] and they will gain by carrying out activities toward that end. These groups may lose power and influence to carry out their projects if the Costa Rican government decides to launch a multipronged effort using its own resources.

Banana Companies

The multinational companies that own the large banana plantations near indigenous reservations have a stake in indigenous health policy for two main reasons. First, new initiatives that force them to make conditions better for workers and clean up water supplies will affect their bottom line. Second, they would gain a healthier workforce through improvements in the food security and health of the indigenous. It is often the case that companies are more convinced of the first reason than the second, and they influence policymakers to uphold the status quo.

[2] The Asociación Cultural Sejekto de Costa Rica, which "promotes the establishment of indigenous organizations and the development of sustainable economic alternatives to improve living conditions of indigenous communities," is one such organization (RajBhandary 1993). There are many others.

Mainstream Society

The Costa Rican population as a whole is a stakeholder in policies to improve indigenous health. Empowering indigenous and improving their standard of living is a cost. Because the indigenous are such a minority, at only 1–2 percent of the population, it is unlikely that those in the mainstream society will be enthusiastic about diverting tax money and government funds to indigenous groups. The population as a whole will gain, however, from improvements in the conditions for the worst-off among them. Improvements in indigenous food security and nutrition will reduce communicable diseases, which will benefit the entire population. Such improvements may also reduce the number of young, uneducated indigenous who come to the cities in search of employment and could thus lower unemployment and crime. Finally, encouraging use and possible sale of native plants will promote biodiversity, boost national pride, and serve as a selling point for the Costa Rican economy (ecotourism is the highest contributor to Costa Rica's GDP).

Policy Options

Given the issues identified around the health and nutrition of indigenous peoples, several possible policy options to improve indigenous food security, nutrition, and health are listed for debate. Each entails different levels of government input and has different short- and long-term effects. Some options are similar to development initiatives for the rural poor in general, but they take into account cultural knowledge and traditions specific to Costa Rica's indigenous peoples.

Agricultural Interventions

Promote consumption of native and wild plants. As already described, consuming native and wild crops can provide micronutrients and beneficial phytochemicals, buffer against lack of cash flow owing to difficulty selling crops, and strengthen culture. To promote the use of nutritious wild and native crops, communication is needed about their existence and value. This option involves either hiring indigenous extension agents or spending more time learning from the indigenous about all of their food sources rather than training them on the food crops with which the extensionists are most familiar. This communication will validate

these foods as appropriate and acceptable, both to the researchers or extensionists and to the indigenous, who have largely lost confidence in the value of these foods. Johns and Eyzaguirre (2006, 182) write, "That traditional systems once lost are hard to recreate underlines the imperative for timely documentation, compilation, and dissemination of eroding knowledge of biodiversity and the use of food culture for promoting positive behaviours."

One member of the Ministry of Health has worked with an indigenous community in northern Costa Rica to document native foods in a picture booklet for use by the community. The author had difficulties with it because so many plants look very similar, and someone who is illiterate and untrained in their use could easily pick the wrong plant (Gonzalez 2006). "Talking books" are a potential solution; they provide a large picture of the plant, and instead of written words, each page contains a recording of a village elder talking about the plant, where to find it, how to identify it, and how to use it (Bletter 2006). This form of communication appeals to youth, who are most likely to become disillusioned with their native community and disinterested in carrying on indigenous traditions.

Increase research on the nutritional content of native crops. In 2004 the World Vegetable Center released a report entitled *Promoting Utilization of Indigenous Vegetables for Improved Nutrition of Resource-Poor Household in Asia* (AVRDC 2004) that outlines current activities such as measuring the profitability and income generation of indigenous vegetable production and assessing vitamin A, iron, and antioxidant content of indigenous vegetables in several Asian countries. Such an assessment has been done in other places, such as in India, where a table called *Nutritive Values of Indian Foods* is widely used (Gopalan et al. 2002). This kind of research helps to select the most nutritious species to promote in crop improvement programs, realizing that overall diversity is the greatest contributor to nutritional adequacy.

Improve native crop productivity. In 1993 an NGO called FUNDAEC (Foundation for the Application and Teaching of the Sciences) did a participatory community development project with Bribri farmers to improve agriculture while supporting "Bribri culture and traditional farming knowledge" (Whatley 2006). This project assessed the appropriateness of technological inputs to Bribri farming practices and the marketing potential of indigenous crops. The program initiators as well as the Bribri participants found that process itself deepened understanding of the system and empowered the farmers to choose methods that could improve productivity. A participatory process is not the usual way to improve crop yields, but for this intervention, it seemed to work well. The Bribri became aware of possible farming inputs and marketing outlets and were empowered to decide which ones worked best.

Promote the sale of indigenous crops. Beyond their clear contributions to nutrition and medicine, so-called minor crops have the potential to contribute significantly to income. Some wild crops, such as ginseng, have become blockbuster sellers on the world market. China holds 40 percent of the world ginseng market, and while the profits are by no means limited to minority groups in China, it has helped some of them economically—80 percent of the ginseng crop comes from northern regions of China (Kunshan 2007), where minority groups live. In the Andes of Bolivia and Ecuador, indigenous people rely on a grain crop called *chocho* that is highly nutritious, containing essential fatty acids and protein. INIAP (the national institute of agriculture in Ecuador) is currently working on a project to increase sustainable production and sales of *chocho* to a mainstream market. This effort involves demand creation, because it may require changing the tastes of mainstream consumers. If native foods were found desirable, however, it would be a niche market in which the indigenous could compete well.

Focus on breeding varieties of staple foods that grow well in mountainous and/or dry regions. Varieties of rice, corn, and beans most commonly used in Costa Rica do not necessarily yield well in mountainous regions. An option is to test cultivars from other mountainous regions in the world for adaptability to the reservations of Costa Rica. This option may increase the chances of long-term income increases for the indigenous by allowing them to sell widely acceptable crops. This solution may be more convenient for agricultural researchers, who are familiar with these crops and may have access to germplasm for breeding programs. A consideration is that the 24 reservations in Costa Rica are not all mountainous and vary in their

ecologies, so different varieties may be well adapted to each zone.

Provide market links for indigenous people to sell cash crops. Most indigenous people live in the reservations, which are isolated from the rest of society and thus make poor and uncompetitive markets. Forming cooperatives among indigenous farmers could maximize profits by minimizing the cost of reaching larger markets. Organic techniques or linking with an international fair trade company to sell products domestically and abroad could give Costa Rican farmers a niche market. In 1995 a group of Bribri women succeeded in forming a certified organic cacao cooperative, COMUITA (Comisión de Mujeres Indígenas de Talamanca), which increased income for the dozens of women farmers involved. Another group of small producers formed an organic cooperative, APPTA (La Asociación de Pequeños Productores de Talamanca), drawing on the nearly 1,200 organic producers in Talamanca. They sell their organic, free trade produce primarily to the United States (Andrade and Detlefsen 2003).

Although it may take a few years for cooperatives to form and to market produce effectively, in the meantime agricultural extensionists could encourage the planting of gardens for home use and the harvesting of wild food plants. This approach would provide a home-production means of achieving food security instead of encouraging total dependence on a cash economy to which it is difficult to gain access.

Involve women as participants and leaders in agricultural interventions. As already described, women are often a household's primary farmers and food providers and are also in most direct touch with the nutritional needs of their children. Aiming interventions at women may be a more efficient way to improve food security than working only with men.

Restore land in reservations so that it is more productive. Fertilizers, organic techniques, contour farming, and appropriate mulching and tilling techniques could improve land so that available crops grow better and food security is increased.

Move indigenous reservations to more productive land. Moving the indigenous reservations would be a drastic solution that could dramatically improve the resources available to indigenous people for food production or other kinds of income generation, in addition to providing better access to health care and clean water.

Encourage a change in livelihoods. Given that most of Costa Rica's economy involves the service sector or cash crop production, the health and livelihoods of indigenous people might improve if they are integrated into the mainstream economy by taking factory jobs or working for large agribusinesses. This seems to be the default solution, given the structure of the national and global economy. Pushing such a strategy would involve intensive outreach and training and indigenous migration to cities, over time effectively dissolving the indigenous reservations and communities as they integrate into the mainstream economy.

Encourage "agrotourism" in indigenous reservations. Building on Costa Rica's main income source, the Ministry of Health in the canton of Buenos Aires, Costa Rica has adopted agrotourism as one strategy for indigenous areas (Ministerio de Agricultura y Ganaderia 2006a). The ministry does not outline exactly what this strategy would involve, but native crop production could be of interest to tourists visiting an indigenous farm. The Kekoldi indigenous reserve, near the Panama border, is a tourist attraction: for US$50, tourists can visit waterfall-graced sections of the Kekoldi and Bribri Indian Reserves, tour a medicinal plants garden, and see a local market (presumably the tourists participate in that market as well) (Gray Line Costa Rica 2006). Large investments in infrastructure would have to be made to make some reservations accessible to tourists.

Interventions for Clean Water

Make all water potable in indigenous areas. Ensuring potable water involves building infrastructure to provide purified water to mountainous and other undeveloped regions, as well as creating and enforcing laws on water quality in banana plantation areas. The government could build a water purification system for *bananera* regions or require that the companies build such systems. Banana plantations could also radically change their agrochemical use and become organic producers.

Increase culturally appropriate health messages about hygiene and safe water use. Increased

extension efforts to deliver health messages should use culturally appropriate materials, including not only words, but also translation of pictures and concepts to fit indigenous life and resources.

Interventions for Better Health

Build more clinics in remote indigenous areas. Currently, many indigenous people do not have any or adequate access to clinics. Building more clinics requires substantial investments, not just in building materials, staff, and supplies in the clinics, but also in roads to reach the places currently lacking clinics. Very few indigenous are educated as medical professionals, so non-indigenous medical staff will have to commute periodically to the remote clinics.

Dispatch mobile clinics. Instead of building clinics, staff could visit remote communities periodically in mobile clinics, carrying supplies and medicines with them. This approach would involve building passable roads to remote communities and hiring staff willing to spend long hours in a vehicle and perhaps days away from home.

Encourage use of traditional medicine and midwives. The medical establishment has largely discouraged traditional medicine. This attitude is unwise, because existing clinics clearly do not fulfill the health needs of the population and traditional medicine has the potential to reach the entire indigenous community. Canada has encouraged traditional healers to take the lead in the health of their community (Indigenous Health Knowledge Transfer 2006). The Pan American Health Organization (PAHO) and the World Health Organization (WHO) have released a plan for harmonizing indigenous and conventional health systems in the Americas, recognizing the inherent differences between the two and calling for policies that would take advantage of the strengths of both (PAHO and WHO 2002). Past experience has shown that integrating traditional medicine into an existing modern clinic is not the best way to promote traditional medicine; it may be better promoted by sponsoring the training of young indigenous healers. For this strategy to be effective, it must be implemented quickly, before the traditions are lost altogether.

Educate indigenous people to participate in health care for their communities by encouraging school and university attendance. There is no better way to increase the cultural competence of medical professionals than to have a diverse medical team, in which minorities can better understand the health situation and problems of their own communities and how to solve them. Australia and Brazil have promoted this strategy with some success (Oakes 2003).

Facilitate community radio stations. Community radio can spread health messages and cultural pride. Creating indigenous radio stations can be a powerful tool in communicating interventions and health behaviors that work, and announcers can speak to the community in their own language and context.

Improve international and national statements on the rights and health of indigenous people. The United Nations Declaration on the Rights of Indigenous Peoples was adopted by the Human Rights Council on June 29, 2006; indigenous leaders are currently advocating adoption by the General Assembly (UNPFII 2006). Official statements can cement political commitment to an issue and may be an important strategy for increasing attention and resources to indigenous health. Bioversity International, one of the centers of the Consultative Group on International Agriculture Research, proposed a strategy in 2007 to use locally available biodiversity. According to Frison et al. (2006, 2), who announced the statement, "It is a strategy that seeks to re-vitalize and draw on existing indigenous and traditional knowledge and food systems, thereby engendering livelihood options for the poor and malnourished in rural and urban communities in Sub-Saharan Africa in particular, and other developing parts of the world." As part of the strategy, efforts are underway to document the extent of indigenous food use and the value of indigenous foods in both home use and the market, as well as to initiate public awareness campaigns, which have already started in Kenya (Frison et al. 2006). Such statements and initiatives by multilateral groups help to shape political will.

Assignment

Your assignment is to recommend to the government of Costa Rica a set of policy measures to improve the food security, nutrition, and health of the indigenous populations in Costa Rica.

Additional Readings

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